

CLAIMS

What is claimed is:

1. A pressure infusion apparatus comprising:

a pressure infusion bag being filled with a medium for exerting pressure on an infusate bag; and

a manually operable over pressurization relief apparatus linked to the pressure infusion bag, the manually operable over pressurization relief apparatus allowing the user to quickly and efficiently toggle between at least a first and second predetermined over pressurization limit, the selected over pressurization limit corresponding to an over pressurization limit of the medium in the pressure infusion bag.

2. The pressure infusion apparatus of claim 1, wherein the medium in the pressure infusion bag comprises a liquid.

3. The pressure infusion apparatus of claim 1, wherein the medium in the pressure infusion bag comprises a gas.

4. The pressure infusion apparatus of claim 3, wherein the medium in the pressure infusion bag comprises ambient air.

5. The pressure infusion apparatus of claim 4, wherein the manually operable over pressurization relief apparatus includes a pressurization chamber.

6. The pressure infusion apparatus of claim 5, wherein the pressurization chamber is fluid coupled to the pressure infusion bag.

7. The pressure infusion apparatus of claim 6, wherein the pressurization in the pressurization chamber corresponds with the pressurization in the pressure infusion bag.

8. The pressure infusion apparatus of claim 7, wherein the manually operable over pressurization relief apparatus includes a manual over pressurization selector.

9. The pressure infusion apparatus of claim 8, wherein the manual overpressureization selector allows the user to quickly and efficiently toggle between at least a first and second predetermined over pressurization limit.

WORKMAN, NYDEGGER & SEELEY
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

10. An over pressurization relief apparatus adapted to be linked to a pressure infusion bag to prevent over pressurization of the pressure infusion bag, the over pressurization relief apparatus comprising:

a pressurization chamber linked to the pressure infusion bag, the pressurization in the pressurization chamber corresponding to the pressurization in the pressure infusion bag;

an pressure relief mechanism;

a seal positioned between the pressurization chamber and the pressure relief mechanism to prevent the loss of pressurization from the pressure infusion bag when the pressurization in the pressurization chamber is less than a selected over pressurization limit; and

a manual over pressurization limit selector, wherein the manual over pressurization selector allows a user to manually select from at least a first and second over pressurization limit such that when the pressurization in the pressurization chamber exceeds the selected over pressurization limit the air can escape from the pressure relief mechanism.

11. The over pressurization relief apparatus of claim 10, wherein the seal is movable.

12. The over pressurization relief apparatus of claim 11, wherein the volume of the pressurization chamber varies based on movement of the seal.

13. The over pressurization relief apparatus of claim 12, wherein the one wall of the pressurization chamber is comprised of the seal.

14. The over pressurization relief apparatus of claim 13, wherein the manual over pressurization selector moves the seal to change the volume of the pressurization chamber when selecting a different over pressurization limit.

15. The overpressurization relief apparatus of claim 14, further comprising a pressure responsive mechanism.

16. The over pressurization relief apparatus of claim 15, wherein the pressure responsive mechanism operates in response to the amount of pressurization in the pressurization chamber.

17. The over pressurization relief apparatus of claim 16, wherein the over pressurization selector is positioned internal to the pressure responsive mechanism.

18. The over pressurization relief apparatus of claim 17, wherein the over pressurization selector, the pressure responsive mechanism, and the seal comprise a valve mechanism having an effective length defining the volume of the pressurization chamber.

19. The over pressurization relief apparatus of claim 18, wherein the over pressurization selector moves the seal relative to the pressure responsive mechanism to increase the effective length of the valve mechanism and decreasing the volume of the pressurization chamber and resulting in an higher over pressurization limit.

20. The over pressurization relief apparatus of claim 19, wherein the over pressurization selector moves the seal relative to the pressure responsive mechanism to decrease the effective length of the valve mechanism increasing the volume of the pressurization chamber and resulting in a lower over pressurization limit.

21. An overpressure relief valve comprising;

an outer housing;

a pressurization chamber positioned internal to the outer housing, the pressurization chamber being filled with a medium having a pressurization representative of the pressure in the pressure infusion bag;

a manual pressurization selector which allows a user to select from at least a first and second over pressurization limit of the pressure in the pressure infusion bag; and

a pressure relief mechanism for preventing additional pressurization in the pressure infusion bag when the pressurization in the pressure infusion bag reaches the selected over pressurization limit.

22. The over pressurization relief apparatus of claim 21, wherein the pressure relief mechanism comprises a pressure relief groove integrally coupled in the outer housing.

23. The over pressurization relief apparatus of claim 22, wherein the pressure relief groove exhausts pressurization in the pressurization chamber when the seal moves sufficiently such that the pressurization chamber comes in fluid contact with the pressure relief groove.

24. The over pressurization relief apparatus of claim 23, wherein exhausting of pressurization in the pressurization chamber results in movement of the seal.

25. The over pressurization relief apparatus of claim 24, wherein movement of the seal in response to exhausting of pressurization in the pressurization chamber positions the seal such that the seal prevents fluid contact between the pressure relief

groove and the pressurization chamber when the pressurization in the pressurization chamber moves below the over pressurization limit.

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1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

26. An mechanical overpressure relief valve comprising;

an outer housing having a pressure relief groove;

a pressurization chamber positioned internal to the outer housing, the pressurization chamber being in fluid communication with the pressure infusion bag such that the air pressure in the pressurization chamber is the same as the air pressurization in the pressure infusion bag; and

a movable seal positioned between the pressurization chamber and the pressure relief groove when the air pressure in the pressure infusion chamber is less than an over pressurization limit, wherein the seal is movable based on the air pressure in the pressurization chamber such that when the air pressure in the pressure infusion chamber is increased to greater than a selected over pressurization limit the movable seal moves to a position in which the pressurization chamber is in fluid contact with the pressure relief groove such that air is exhausted from the pressurization chamber reduces the air pressurization in the pressurization chamber to at least the selected over pressurization limit.

27. The over pressurization relief apparatus of claim 1, wherein the movable seal comprises a portion of a valve mechanism.

28. The over pressurization relief apparatus of claim 27, wherein the valve mechanism further comprises a pressure responsive mechanism and an over pressurization selector.

29. The over pressurization relief apparatus of claim 28, wherein the over pressurization selector moves relative to the pressure responsive mechanism to change

the amount of pressurization in the pressurization required to move the seal in fluid contact with the pressure relief groove.

30. The over pressurization relief apparatus of claim 29, wherein the over pressurization selector includes a plunger, a rotating member, and an engagement member to maintain the over pressurization selector in at least a first position and at least a second position.

31. The over pressurization relief apparatus of claim 30, wherein the rotating member moves relative to the engagement member to allow the over pressurization selector to move relative to the pressure responsive mechanism.

32. The over pressurization relief apparatus of claim 31, wherein the rotating member includes a plurality of rotation members, each rotation member having a ridge and a helical ramp and wherein each the engagement member includes a plurality of first engagement ridges, first helical ramps, extension engagement notches, second engagement ridges, second helical ramps, and channels wherein the ridges and ramps of the rotation members engage the extension engagement notches to when at a higher over pressurization limit and the rotation members are positioned in the channels when at a lower over pressurization limit.

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1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
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